II. PROPOSAL ABSTRACTS

The Renewables Working Group has received six comprehensive program proposals and two adjunct proposals for strategies to implement the renewable energy policy embodied in the CPUC's December 20, 1995 decision on restructuring of the electric utility industry. The proposals offer a variety of strategies to achieve the CPUC's objectives for renewable energy, and illustrate the range of approaches that can be taken to develop an effective and successful program for the promotion of renewable energy sources within the context of a deregulated market for electricity generation. Five of the six comprehensive proposals involve some sort of minimum renewables purchase requirement. The sixth comprehensive proposal offers renewable generators that add electric production to the grid an auctioned surcharge funded production credit. The two adjunct proposals are aimed at promoting targeted emerging renewable energy technologies within the context of any of the comprehensive implementation programs by providing an additional incentive to accelerate full commercialization.

Sponsors submitted the following brief abstracts outlining the key points of their proposals. Full proposals and parties' comments are contained in Section IV.

A. Comprehensive Program Proposals

1. Proposals with a Minimum Renewables Purchase Requirement

a. Renewables Portfolio Standard

Submitted by: The American Wind Energy Association (AWEA), California Biomass Energy Alliance (CBEA), Geothermal Energy Association (GEA), Solar Thermal Energy Alliance (STEA), Union of Concerned Scientists (UCS),California Integrated Waste Management Board (CIWMB)

This proposal is for a minimum purchase requirement of renewable electricity to be applied equally to all retail sellers of electricity under the Commission's jurisdiction and, with legislation, on all retail sellers statewide. The definition of renewables is limited to wind, solar, geothermal, solid fuel biomass, biogas, and solid waste-to-energy. The proposal, termed a "Renewables Portfolio Standard" (RPS), is designed to preserve the existing level of renewable energy generation serving the state by requiring that all retail sellers include a minimum of 10% renewable energy (kWh) in their sales, demonstrated by ownership of tradable "Renewable Energy Credits." The percentage requirement is proposed to gradually increase consistent with past Commission decisions. Within the 10% requirement is a 1.8%

requirement for electricity generated by solid fuel biomass, demonstrated by ownership of tradable "Biomass Energy Credits." The separate technology band for solid fuel biomass reflects the desire to preserve the substantial and unique environmental benefits of this industry that stem from its use of biomass fuel, and its higher cost of electricity generation due to the same cause. The cost of renewable and biomass energy credits is capped at a level somewhat above the expected cost of these credits. Importantly, the price cap method does not undermine the market competition.

This strategy builds in competition among renewables by beginning the obligation at a level slightly lower than the electricity delivered by renewable generators in 1993, and by the competitive procurement of renewable energy credits by retail sellers. The regulatory role is limited to certifying these credits, verifying that retail sellers possess the required number of credits for each reporting period, and imposing a significant penalty for non-compliance on retail sellers that fall short. This proposed penalty is sufficiently large to ensure full compliance.

b. "Customer Choice" Renewable Portfolio Standard (RPS)

Submitted by: Independent Energy Producers Association (IEP)

IEP's RPS proposal is for a market-based program that does not require legislation. The program emphasizes customer choice in procuring renewable energy resources through direct bilateral contract opportunities and the buying/selling of renewable energy credits (RECs). Retail energy providers may be certified as "green" energy providers, if they meet certain standards, thereby providing customers with additional assurances that their retail provider has attained a certain level of renewables in its resource portfolio. The PUC-regulated utility distribution companies (UDC) serve as a "regulatory backstop" to ensure attainment of the RPS. The UDC enters the renewable market, if necessary, to procure renewable energy (kWhs) representing the difference between what the RPS proscribes and what the market achieves on its own. Costs borne by the UDC are passed through to all distribution customers (including direct access customers) not self-procuring renewables. The PUC provides regulatory oversight over the UDC to ensure timely and efficient compliance.

Renewable energy is that defined by existing state law. The RPS would be set to the extent practical at the level of diversity that existed as of 1993 (i.e. renewable kWh as a percentage of total annual kWhs), including a solid-fuel biomass technology band, plus preliminary BRPU winners.

c. Renewable Capacity Credit Proposal

Submitted by: Northern California Power Agency (NCPA)

The renewable resource capacity credit proposal requires all retail sellers of electricity to end-users in California to acquire and cancel renewable resource capacity credits (RRCCs), measured in 100 kilowatt increments, equal to 18 percent of the sum of their monthly peak loads during the preceding twelve months. RRCCs are created when a facility, located in California and using a renewable electric generation technology, operates at a level equaling or exceeding the average capacity factor for facilities of that type. Facility capacity is determined by the owner and registered with the California Energy Commission; it may be less than nameplate rating.

Registered capacity is the basis for both qualifying capacity factor and RRCC issuance. Renewable electric generation technologies are defined conventionally, including hydropower, wind, solar, geothermal, biomass including solid fuel and landfill gas, and hybrids not exceeding 25 % fossil input. RRCCs are issued monthly to facility owners. RRCCs are tradeable on a Capacity Credit Exchange administered by the Energy Commission, which also issues credits, establishes average capacity factors, verifies operation of facilities and enforces retailers' compliance with the standard. Failure to meet the standard subjects a retailer to a penalty equal to 1 mill/kWh of sales.

d. Single-Band Renewable Portfolio Standard (SB-RPS)

Submitted by: Southern California Edison Company and Pacific Gas & Electric Company

This version of the minimum renewables purchase requirement ("MRPR") requires that all CPUC-jurisdictional or all statewide entities selling to end-users in California annually demonstrate that either 10% of the energy they sold to end-users in California is from renewable energy sources or that they have ensured that an equivalent amount of renewable energy has been provided to the California market through purchase of tradeable credits. (The amount of energy purchased from renewable energy sources or the number of credits purchased may of course exceed the 10% requirement.) There are no special technology bands; hydro is excluded from the definition of renewables; and the value of all renewable credits related to existing QF contracts flows back to the ratepayers. Renewable credits may be purchased at a price of 2 cents/kWh from the state agency responsible for administering the program. This ability to purchase renewable credits from the state agency effectively establishes an upper limit on the cost of the program to end-use customers

The purchase obligation is established on all sellers under the CPUC's jurisdiction on January 1, 1998. If this obligation is not extended to all providers to end-use customers statewide through legislation by the end of the year 2000, the obligation would be eliminated.

Following the year 2000 and until termination, the obligation and other parameters of the standard are to be fully reviewed every five years.

e. All Renewable Credit Proposal

Submitted by: Sacramento Municipal Utility District (SMUD)

The All Renewable Credit Proposal (ARC Proposal) strives to maintain the current level of electrical resource diversity supplying California consumers at 21% renewables. The ARC Proposal maintains this diversity by giving credit to all renewables and requiring that 21% of the electricity supplied to California consumers be from renewable resources in the future. No suppliers are exempt from this requirement. All retail sellers will need to report their power sources and their sales. If sellers do not meet the 21% renewable source requirement, they can purchase credits from other California retail sellers having surplus renewable generation. Hydroelectric resources will be eligible for credit toward meeting the 21% requirement if the resources are California utility owned, or continuously under utility or retail seller contract since 1995. In order to avoid having existing hydroelectric resources supplant other renewable resources in the future, the purchase or sale or trading of renewable credits is **not allowed** for hydroelectric resources already in place in 1995. New hydroelectric resources, including upgrades, are eligible for both meeting the 21% requirement as well as credit trading or purchases.

As an alternative to renewable credit trading or purchases, a fund might be established to procure renewable resources for those unable to do so themselves. A restriction would apply to these purchases such that purchases made to enhance renewable diversity would not be allowed for hydroelectric resources already in place in 1995.

2. Surcharge-Funded Production Credit Proposal

Submitted by: Environmental Defense Fund, Cambrian Energy Development LLC, Genesis Energy Systems, Laidlaw Gas Recovery Systems, L.A. Sanitation District, NEO Corp., Orange County, City of Sacramento, Sonoma County, San Diego Gas & Electric, Pacific Gas and Electric, Southern California Edison

This proposal encourages the continued development of renewable projects and technologies in California, through a statewide, state-administered program funded by means of a uniform, statewide public goods surcharge collected from all end users in the State. The surcharge is intended to foster new development in renewable generation projects. The program would be available to wind, solar thermal and photovoltaic, geothermal, biogas, landfill gas, solid fuel biomass and waste-to-energy technologies. This Proposal can accommodate provisions for emerging technologies. The proposal is applicable to existing projects to the extent that (1) existing projects add new capacity (applicable to additional energy resulting from such addition) or (2) existing projects replace existing generation technology with new generation technology (applicable to portion of energy resulting from replaced generation) and (3) no energy or capacity resulting from the new or replaced facilities are subject for sale under a standard offer contract.

The proposal is intended to be funded on a statewide basis. Distribution companies, including municipal utilities, would be responsible for collection of the surcharge. This proposal could, if necessary, be implemented in two stages. Stage 1: funded through the IOUs only and implemented under existing Commission authority; Stage 2: once legislation is passed would expand program to statewide implementation. Funds would be transferred to and distributed by the California Alternative Energy and Advanced Transportation Financing Authority or some other State agency.

This Proposal prescribes an administratively straightforward, non-discretionary method of allocating the surcharge funds: renewable projects compete for funds on the basis of the incremental above market cents-per-kilowatt-hour level of support they require. Funds would be provided as a cents-per-kilowatt-hour production credit only for the actual energy produced. The cents-per-kilowatt-hour production credit would be set up-front, and would be fixed for a 10-year period in order to support the financing of renewable projects. The production credits would supplement the revenues renewable projects receive from marketing their power, either through sales to the Power Exchange, or sales through contracts for differences or bilateral arrangements.

New allocations of production credit awards are intended to be made each year over a five-year period beginning in 1998. Credits awarded in any year would be secure for their 10-year duration. In accordance with the direction provided by the Commission in D. 95-12-063, the program would be reviewed in the year 2000 before subsequent production credit allocation awards were made.

B. Adjunct Proposals

a. Electricity From Landfill Gas And Other Biogas; Climate Active Gas Mitigation In Utility Restructuring

Submitted by: Monterey Regional Waste Management District, City of San Diego, Sacramento County, Yolo County, International Power Technology, Royal Farms, Institute for International Management (IEM), EMCON

Electric power fueled by biogas, from landfills and other sources, already amounts to about 200MWe in California, with its potential several-fold higher. Capture and energy use of biogas substantially reduces emissions of methane to the atmosphere. Because methane's greenhouse potency is equivalent to over 20 times its weight of carbon dioxide, electricity from biogas has benefits in climate change mitigation exceeding those of other renewable energy sources. Landfill gas use, alone, could offset by 10% or more total greenhouse gas (mainly CO_2) emissions by the California electric utility industry.

Consideration and promotion of renewable electricity climate benefits is consistent with California and federal policies, and international treaties (the "Rio Convention"). Nearly all California utilities are signatories to the voluntary U.S. Climate Challenge Program, to reduce climate active gases. This proposal presents an approach to include the specific climate benefits of biogas utilization into the proposed Renewable Energy Credit (REC). The mechanism involves a subsidiary component of the REC--the Greenhouse Environmental Credit (GEC). The GEC allows technologies providing higher climate change benefits to receive expanded credit. Credit would apply specifically to electricity from landfill and other biogas sources, much or all of whose methane would otherwise escape into the atmosphere. Whenever greenhouse gas mitigation (fossil CO_2 offsets) can be obtained at sufficiently low cost (by criteria herein) it is proposed that electricity from biogas be allowed to expand independently, without affecting other renewables' uses. We propose and justify, for landfill and other biogas, a value for the GEC equivalent to an additional REC, and propose mechanisms for its implementation.

b. Emerging Renewable Technologies Commercialization Pathway

Submitted by: the California Solar Energy Industries Association (CAL SEIA), the Solar Energy Industries Association (SEIA), the California Energy Commission Energy Technology Development Division (CEC/ETD), and the Natural Resources Defense Council (NRDC)

The Commission's December 20, 1995 decision recognized the need for a diversity of renewable resources and for the development of new renewables which would enhance this diversity. All of the “comprehensive” proposals presented by the Renewables Working Group (RWG) would primarily support existing generating facilities which utilize well-established renewable technologies. This is because these other proposals require all

technologies to compete equally based solely on the current costs of generation. Valuable new solar and other emerging technologies will inevitably lose out in these proposals, as they are presently in the early stages of the commercialization process, and, consequently, their costs today are higher than that of the well-established wind, geothermal and biomass technologies. Indeed, this "adjunct" proposal would not be necessary if some means of accommodating higher-priced new renewable technologies were spelled out in the other proposals.

In order for these emerging renewable technologies to reach the cost levels of the well-established technologies, a pathway must be established which creates the small markets required at early stages of commercialization. Early markets will enable emerging technologies to achieve the production efficiencies and cost reductions inherent in the commercialization process. This proposal outlines a number of ways in which small, but critical, markets for new, emerging technologies could be created, and can be amended to any of the "comprehensive" proposals.

Adequate resource diversity requires that this missing commercialization pathway be provided for in whatever implementation strategy the Commission ultimately adopts.